

Table 1. Network Server Appliances

Sample uses

File serving, caching, proxy serving, gateways, load balancing, firewalls, e-mail

Memory

Typically large, such as 64MB with addressability of 4GB or greater

Form factor

Thin form factor for rack-mount usage. "Headless" operation (no monitor attached)

Operating system

Software architecture is optimized for the specific function of the device; not a full, multifunction operating system

Disk

Large capacity, such as 4GB or greater

I/O

Fast network connections, such as 100MB Ethernet and support for perhaps as many as 16 devices

Management

Remotely manageable over a network or Web connection

Other standards

Communication standards such as NEBS or ETSI

Fostering Innovation and Growth

By bringing industry agreement on the low-level interfaces that provide the foundation of server appliances, the Server Appliance Industry Program will free companies to put their design energy into innovation at the upper levels of the solution stack, rather than having each company reinvent the wheel of basic infrastructure. The stabilization of hardware and low-level system interfaces will effectively isolate the application layers from the hardware platform. This will provide appliance vendors with flexibility in hardware design and choice of suppliers. It will also help establish volume markets for platform vendors, adapter and peripherals vendors, and application software vendors and enable them to achieve economies of scale more rapidly than in a fragmented market. Having common hardware building blocks and low-level software interfaces also fosters an environment with multiple operating systems and a wealth of applications. The ultimate beneficiaries will be business IT departments and Internet users, who will benefit from an emerging server appliance marketplace that fosters growth, innovation and coherence.

Intel's Server Appliance Industry Program: Spurring Growth and Innovation in a New Emerging Market Segment

An Intel White Paper

Open, industry-wide specifications help avoid market segment fragmentation, foster innovation and create volume markets that give users a broad range of compatible choices. Intel will work with industry leaders to develop a Server Appliance Design Guide that defines common platforms for the new emerging server appliance market segment.



The Emerging Market Segment for Server Appliances

IT departments and networked-based businesses are driven by a growing need for increased flexibility in their computing and communications infrastructures. In large businesses, increasing numbers of servers are assigned the task of processing information and delivering services via the Internet or a corporate intranet. In addition, businesses are finding they must not only maintain a corporate presence on the Internet, but also use the Internet to integrate their business processes with those of their major customers and suppliers.

Reliability and simplicity are key criteria for telcos, ISPs and other businesses, since server down-time can mean lost revenue and disrupted business processes. This is particularly true for remote offices that don't have a specialized computer support department on-site, but is also important for large businesses as well.

Market Demand

The exponential growth of the Internet is creating strong demand for new types of servers that can be deployed very rapidly and managed remotely over the network. The demand is coming from voice carriers, telecommunication equipment providers (telcos) and Internet service providers (ISPs), as well as from the information technology (IT) departments of large businesses. To keep up with rapid growth and a rapid rate of technology change (such as combining voice and data), these businesses must be able to quickly execute fundamental changes to their business infrastructure.

Solution: Server Appliances

Server appliances or "thin servers" are emerging as a compelling solution to the business need for reliable, low-maintenance servers. These computers are fixed-function devices or designed to perform a specialized set of network-related server functions including print serving, Web caching, Web security, directory services, search engines, groupware or data storage. They are typically closed-box machines that offer a complete hardware and software solution, run an operating system that is optimized for the specific function and are designed to be remotely managed over the network. Thus, they are easy to install, manage and maintain. Server appliances also feature space-efficient, "headless" operations (no attached monitor); they come with factory-installed applications and do not support user-installed applications.

Server appliances represent an expansion to the overall server market. These new machines are applicable over a broad range of performance classes and functions. The simplicity and ease of installation of appliances has appeal for corporate IT organizations, ISPs and the telecommunications industry because they provide the ability to quickly expand or change the network infrastructure, without replacing general-purpose database and application servers.

Growing the Market: An Industry Group to Overcome Fragmentation

The server appliance market segment is poised for explosive growth. Forrester Research predicts expansion from 91 million units in 1998 to 932 million in 2002¹. However, the market segment is already beginning to fragment with a variety of device types that are designed with widely divergent approaches but aim to solve similar problems. This lack of a common approach can lead to a crazy-quilt of product choices that actually inhibits growth. With such a wide range of different and proprietary device types, software vendors are forced to limit the number of hardware products they can support and the critical supporting applications market cannot develop. Businesses tend to hold off purchases until they see a common approach emerging. In fact, Forrester Research's survey of Fortune 1000 businesses found that 72 percent of respondents, while very interested in server appliances, are postponing purchases of these machines because of the immaturity of applications and the lack of industry standards.

Often, markets take years or even decades to overcome fragmentation and converge on a common design approach. To accelerate this process, Intel announced on December 7, 1998, that it will spearhead a Server Appliance Industry Group, an open industry effort to define common architectural approaches and develop specifications for hardware and low-level system interfaces for network server appliances. In addition to the specification, the industry group will recommend usage models and sample configurations. Table 1 summarizes some key characteristics of network server appliances.

This is a natural role for Intel to play, because it addresses the stabilization of the hardware platform and low-level interfaces. Intel can serve as a neutral party, bringing together competing companies to achieve agreement on a common approach to server appliance infrastructure. Intel's approach is to help competitors identify and agree on low-level areas that don't add unique value to their products, thus opening the path to greater innovation.

¹The Computing Appliance Market, 1998-2002. Published 1998.